UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,292	02/06/2006	Ashok Adur	1200308NUS	6750

35227 7590 02/27/2009

POLYONE CORPORATION
33587 WALKER ROAD
AVON LAKE, OH 44012

EXAMINER	
BOYLE, ROBERT C	
ART UNIT	PAPER NUMBER
1796	
MAIL DATE	DELIVERY MODE
02/27/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/567,292	ADUR ET AL.	
	Examiner	Art Unit	
	ROBERT C. BOYLE	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3 and 9-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3 and 9-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/25/2007, 06/07/2006, 06/07/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1 and 9 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a catalyst system for use on thermoplastic polyolefins and elstomers with substantially saturated hydrocarbon backbones with unsaturated sidechains available for curing, does not reasonably provide enablement for any type of thermoplastic elastomer. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make any use the invention commensurate in scope with these claims.

3. Case law holds that applicant's specification must be "commensurately enabling [regarding the scope of the claims]." See *Ex Parte Kung*, 17 USPQ2d 1545, 1547 (Bd. Pat. Appl. Inter. 1989). Otherwise undue experimentation would be involved in determining how to practice and use applicant's invention. The test for undue experimentation as to whether or not all compounds within the scope of claims 1 and 9 can be used as claimed and whether claims 1 and 9 meet the test is stated in *Ex parte Forman*, 230 USPQ 546, 547 (Bd. Pat. Appl. Inter. 1986) and *In re Wands*, 8 USPQ2d 1400 (Fed. Cir. 1988). Upon applying this test to claims 1 and 9, it is believed that undue experimentation would be required because:

4. (a) The quantity of experimentation necessary is great since claims 1 and 9 read on any type of thermoplastic elastomers which include thermoplastics such as polyesters and any type of elastomer such as nitrile rubber.

5. (b) The breadth of the claims is large, encompassing all thermoplastic elastomers.

6. (c) There amount of direction or guidance presented for making a thermoplastic elastomer is very limited to include only EPDM and polypropylene.

7. (d) The quantity of experimentation is large because of the large amounts of thermoplastic elastomers available.

8. In light of the above factors, it is seen that undue experimentation would be necessary to make and use the invention of claims 1 and 9.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Claim 9 has confusion in the scope because “thermoplastic elastomer” is used in multiple ways, both as an ingredient and as a final product.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 1, 3, 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abdou-Sabet et al., U.S. Patent 4,311,628 in view of Ryang et al., U.S. Patent 5,962,608.

14. Claims 1 and 3 disclose a thermoplastic elastomer prepared using a catalyst system comprised of at least one non-brominated phenolic resin, with methylol groups, at least one non-transition metal halide, that is $MgCl_2$, $CaCl_2$, NaCl, KCl, at least one acid that is either oxalic acid, citric acid, or stearic acid. The preparation of the elastomer is in product-by-process format.

15. Abdou-Sabet teaches thermoplastic compositions using a phenolic curative, such as dimethylol-p-octyl phenol, in the presence of stannous chloride, zinc oxide and stearic acid (abstract; column 1, lines 19-58; column 3, lines 36-66; column 6, lines 23-68; column 8, lines 61-68; column 11, lines 19-68; Table V). Abdou-Sabet does not teach using one of: $MgCl_2$, $CaCl_2$, NaCl, or KCl.

16. Ryang teaches, in the context of curing thermoplastics in the presence of phenolic resins, that metal chlorides, like calcium chloride and magnesium chloride, can be hydrolyzed in the presence of a hydrolyzing agent and a chelating agent to form

metal oxides (column 2, lines 42-67; column 3, lines 7-26; column 11, lines 1-45; column 22, line 48-column 23, line 60; column 30, lines 20-67).

17. One of ordinary skill in the art at the time the invention was made would have been motivated to modify metal in Abdou-Sabet with the chlorides taught in Ryang because metal chlorides are a precursor to the metal oxides used in Abdou-Sabet (see Ryang: column 22, line 48-column 23, line 60) and one of ordinary skill in the art would recognize that combining the metal oxide and halogen donor of Abdou-Sabet into a single precursor would be economically beneficial. Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made.

18. As to claim 9, Abdou-Sabet teaches providing a catalyst system, as discussed in claim 1, in the presence of propylene and EPDM and heating the mixture (column 8, line 61-column 9, line 9; tables I-V).

19. As to claims 10-12, Abdou-Sabet teaches using 2.28 and 1.8 wt% of the metal activator and 4.32 wt% of phenolic curative in a Brabender mixer (column 4, line 51-column 5, line 17; column 9, lines 1-9; Tables IV and V).

20. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abdou-Sabet and Ryang in view of Peterson et al., U.S. Patent 2,726,224.

21. Abdou Sabet does not teach use of the acid in the range claimed, about 1-5 wt%. Peterson teaches using phenolic compounds in the curing of elastomers in the presence of metal chlorides and stearic acid, where the amount of stearic acid used

was 1 part by weight (column 4, lines 10-75; Table 1). It would have been obvious to one of ordinary skill in the art at the time of the invention that the amount of acid used could be the amount recited by Peterson.

22. One of ordinary skill in the art at the time of the invention would have modified the amount of stearic acid in Abdou-Sabet with the amount of stearic acid in Peterson because Peterson teaches that the amount an ingredient used is determined by the type of reaction desired, whether it be a full or partial reaction (column 2, lines 64-72).

23. Claims 1, 3, 9-13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Giller et al., U.S. Patent 3,287,440.

24. Giller teaches using non-brominated phenolic resins, containing methylol groups, for curing elastomers using stearic acid and a group II metal chloride and the corresponding process (column 1, lines 14-32, 42-64; column 3, lines 1-73; column 4, lines 1-12; column 5, lines 1-64; column 6, lines 53-75; column 7, lines 5-59; column 8, lines 20-45). One of ordinary skill in the art would have found it obvious that group II metal chlorides include magnesium chloride and calcium chloride. Giller teaches using 6 parts by weight phenolic resin, 3-4 parts by weight halide, 1-2 parts by weight stearic acid, in a Banbury mixer (column 7, lines 19-31; column 8, lines 20-45).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT C. BOYLE whose telephone number is (571)270-7347. The examiner can normally be reached on Monday-Friday, 9:00AM-5:00PM Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. C. B./
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796